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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/651,498	08/30/2000	JOHN T. DEVLIN	MIO-0071-PA	1401

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05/16/2003

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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 05/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/651,498

Applicant(s)

DEVLIN ET AL.09651498

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The amendment filed 4/2/2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The concept of lower and upper heat regulation zones, lower and upper bounds, cylindrical projection extending from the lower heat regulation flange to the upper heat regulation element, limited extent of the upper heat regulation void and substantial distance from the lower heat regulating flange are new matter introduced in the amendment.

Applicant is required to cancel the new matter in the reply to this Office Action.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 4/2/2003 have been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(f) states that no amendment may introduce new matter into the disclosure of an application. The original disclosure does not support the showing of cylindrical projection extending from the lower heat regulation flange to the upper heat regulation element

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

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pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 36-43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As disclosed in the paragraph 1 above these claims contain new subject matter, which was not disclosed originally but is introduced in the latest amendment. This new subject matter is heat regulation zones, lower and upper bounds, cylindrical projection extending from the lower heat regulation flange to the upper heat regulation element, limited extent of the upper heat regulation void and substantial distance from the lower heat regulating flange

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 36-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this instance the "degradation of exhaust gas flow profile" is not clear. Profile normally refers to how it may look from the side. The specification appears to indicate that degradation of profile may amounts to contamination but does not indicate what it is.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 36-38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto et al (US 5762709) in view of Yoshio Kimura (US 5578127).

Sugimoto et al disclose a spin coating apparatus disclosing a heat regulating element (Fig 2-50), a cylindrical heat regulation void to accommodate an object (Fig 2 1a) and a circumferential gas flow path (Fig 2-30), a temperature sensor in gas flow path (Fig 3 -58a), rotary drive motor, rotary drive spindle (Fig 2-1b, 1) exhaust gas profile (Fig 5 F) and a wafer support (Fig 2 W).

Sugimoto et al do not disclose the regulating frame with fluid inlet and outlet and an additional heat-regulating flange attached to the drive motor.

Yoshio Kimura discloses a heat regulating flange (Fig 2-31b), a rotary drive motor (31) attached to a rotary spindle extending through flange body (31a), liquid source coupled to the fluid conduit (33), a controller coupled to the liquid source (fig 2-36 and Col 5 line 17-19 and line 42- 50), programmed (Col 5 line 42-50) to be responsive to a signal from a temperature sensor proximate the rotary spindle passage and fluid conduit (Arrow connected to 36) so as to control temperature of flange by controlling the temperature of the fluid (Col 4 line 47-50) and a rotatable wafer support (28).

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Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to replace external air flow temperature adjustment unit of Sugimoto by a water jacket around the gas flow enclosure (30) like the one Yoshio Kimura discloses around the rotary spindle in order to have more efficient and less expensive temperature control system and additionally to have a heat regulation flange (as disclosed in Fig 2) to prevent heat conduction from the motor to the wafer.

Regarding dimensions of the heat-regulating void; these are adjustable parameters, which need to be optimized for the processes to be run on the apparatus.

9. Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto et al (US 5762709) in view of Yoshio Kimura (US 5578127) as applied to claim 36 and further in view of Hayes (US 6107608).

Sugimoto et al or Yoshio Kimura discloses temperature control (Fig 2) but do not expressly disclose the location of the temperature sensor.

Hayes discloses a similar heat-regulating flange where the temperature sensor is embedded in it (Fig 7-38 and Col 5 line 47-48).

It would therefore be obvious for one having ordinary skill in the art at the time when invention was made to embed the temperature sensor so as to have a more stable feed back control of temperature for all parts of the spin chuck, being closer to the flange.

Response to Amendment

10. Applicant's arguments filed 4/2/2003 have been fully considered but they are not persuasive.

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Applicant has argued that in Sugimoto the conduit does not present an open framework that avoids the degradation of the exhaust gas profile defined by the wafer-processing bowl and is rather altered.

The exhaust gas profile in Sugimoto is essentially along the spindle and is established to prevent occurrence of contamination due to particles (Col 1 lines 39-41 and Col 2 lines 37-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
May 15, 2003


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700